

MAIL STOP APPEAL
BRIEF - PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants: R. Timmis et al. Attorney Docket No. WEYE121906/22822B
Application No: 10/680,675 Group Art Unit: 1651
Filed: October 7, 2003 Examiner: L.B. Lankford, Jr.
Title: METHODS FOR CLASSIFICATION OF SOMATIC EMBRYOS

APPELLANTS' REPLY BRIEF

Seattle, Washington
August 1, 2006

TO THE COMMISSIONER FOR PATENTS:

Responsive to the Examiner's Answer, appellants respectfully submit the following.

At page 4 of the Answer, the Examiner stated as follows:

Appellant has demonstrated that one can take embryos which are visually determined to be good (an old and well known process), capture digital image data, and then take that data and apply well known data processing algorithms to interpret the data and produce a "classification model."

(Examiner's Answer, page 4, last paragraph.)

To supplement the Examiner's description of the present invention above, appellants refer to the following passage of the specification, which further describes the present invention:

The classification model is deduced from a "training" data set of multiple images of plant embryos or plant embryo organs acquired from embryos having *known embryo quality*. Embryos providing the training set images are classified as acceptable or unacceptable based on biological fact data such as morphological similarity to normal zygotic embryos or *proven ability to germinate or convert to plants*.

(Specification, page 8, lines 24-28, emphasis added.)

In the above description, classification based on "proven ability to germinate or convert to plants" corresponds to classification based on monitoring to see which embryo could germinate. In other words, a classification model may be built based on a follow-up study of the embryos used in building the classification model.

At pages 4-5 of the Answer, the Examiner further stated that:

It is not in the creation of such a model that appellant has failed to adequately describe or enable in their claimed invention *but in the application of said model*. As such, the invention as a whole has not been adequately described or enabled.

(Examiner's Answer, page 4, last line-page 5, first paragraph, emphasis added.)

Contrary to the Examiner's finding above, the specification describes applications (or a reduction to practice) of various exemplary embodiments of the present invention in "Examples 2-5" described in pages 20-42. For example, "Example 2" describes that:

The embryos that were not included in the training data set were then regressed on the two sets of principal components exactly as done in multiple regression. For each regression the residual mean square error was calculated. A test embryo was classified as having either good or bad embryo visual quality depending on which category has the smaller residual mean square error. Using this method test embryos were classified based on the longitudinal top view of an embryo.

(Specification, page 21, lines 28-33.)

The above-quoted passage describes that a classification model deduced from the "training data set" was then tested using "the embryos that were not included in the training data set," or a "test embryo." In fact, Tables 1-11 included in the specification each particularly shows the results of the application of a classification model, in terms of "Percent of ... Embryos Correctly Classified" or "Number correctly classified/number tested." Thus, contrary to the

Examiner's finding, the specification describes the *application* of a classification model to test its effectiveness.

At pages 5-6 of the Answer, the Examiner stated as follows:

Appellant is intending to show possession for generic claims to "quantifiable characteristics" however the specification does not contain an adequate description for the entire scope of this phrase and thus the claims . . . Appellant has not shown anything to indicate that the limitations of claim 14 can be "selected for" using a raw digital image classification model. It is not clear how one could determine if an embryo is pathogen resistant by analyzing a digital image.

(Examiner's Answer, page 5, last paragraph - page 6, first paragraph.)

As discussed above, the specification clearly describes the invention to indicate that the applicants possessed the invention directed to both *creating* and *applying* a classification model to classify embryos according to their putative embryo quality. Further, each of the quantifiable characteristics listed in Claim 14 is a measure of embryo quality, as explicitly described in page 7, line 11-19 of the specification. Since the specification describes creating and applying a classification model to classify embryos according to their putative embryo quality, it follows that the specification also describes creating and applying a classification model to classify embryos according to one or more particular measures (or quantifiable characteristics) of their putative embryo quality as listed in Claim 14.

Because the specification describes the invention to indicate that the applicants possessed the invention directed to creating and applying a classification model to classify embryos according to their putative embryo quality, it follows logically that the specification also describes the invention in such a way so as to enable one skilled in the art to practice the invention.

Respectfully submitted,
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